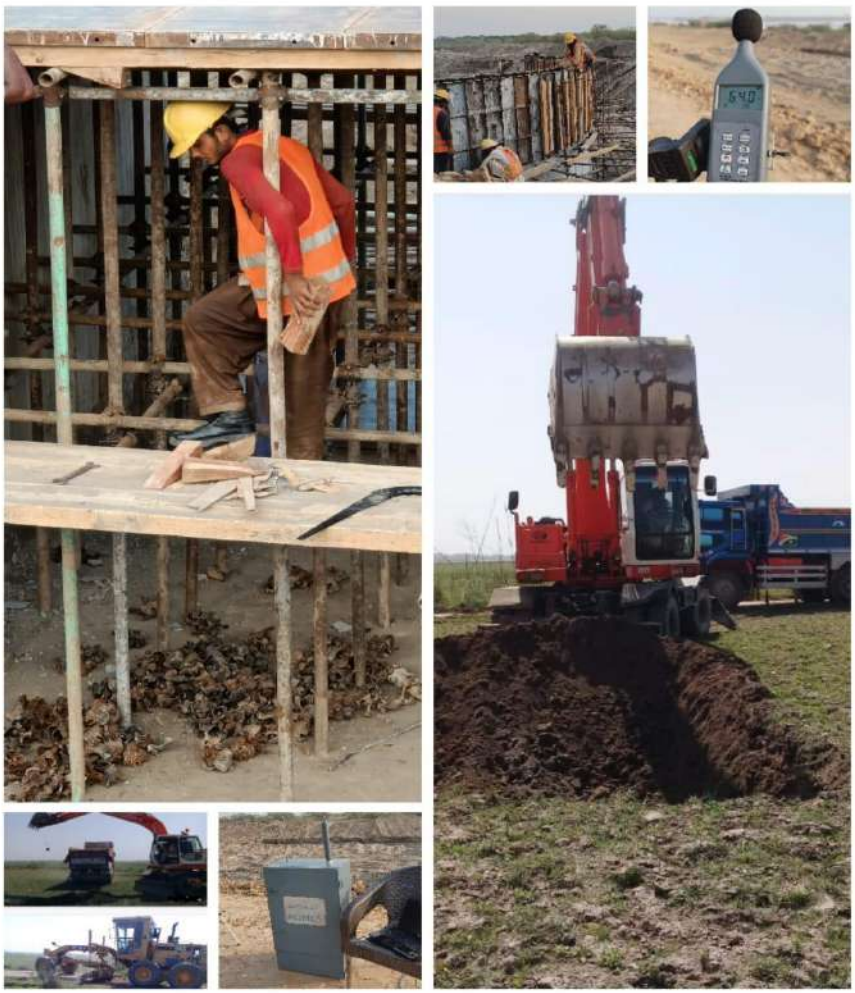
2022

Health Safety and Environment (HSE) Guidelines Manual



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Ravi Urban Development Authority

(RUDA) Lahore

Table of Contents

List of Tables

List of Figures

List of Annexures

List of Abbreviations

ARI	Average Time period Between Floods of a Certain Size
ANSI	American National Standards Institute
AWG	American Wiring Gauge
CAP	Corrective Action Plan
CETP	Combined Effluent Treatment Plant
CDM	Clean Development Mechanism
Cm	Centimeters
CO	Carbon Monoxide
CSC	Construction Supervision Consultant
COSHH	Control of Substances Hazardous to Health
COVID 19	Coronavirus Disease
DBs	Distribution Boxes
EIA	Environmental Impact Assessment
ELCBs	Earth Leakage Circuit Breakers
EMP	Environmental Management Plan
EPA	Environment Protection Agency
EPRP	Emergency Preparedness and Response Plan
ERC	Emergency Response Coordinators
ERP	Emergency Response Plan
ERS	Emergency Response System
ERT	Emergency Response Team
GFCIs	Ground Fault Circuit Interrupters
GHG	Green House Gas
GHS	Globally Harmonized System
GoP	Government of Pakistan
GoPb	Government of the Punjab
HC	Hydro Carbon
HSE	Health, Safety & Environment
HGV	Heavy Goods Vehicles
IEE	Initial Environmental Examination
ISO	International Organization for Standardization
JSA	Job Safety Analysis
Km	Kilometer
KV	Kilo Volt
LAA	Land Acquisition Act 1894
lb	Pound (Unit of Force)
LWMC	Lahore Waste Management Company
MACP	Manual Alarm and Call Point
MEWP	Mobile Elevated Working Platform
MSDS	Material Safety Data Sheet
MSW	Municipal Solid Waste
MW	Mega Watt
NOx	Oxides of Nitrogen
NEP	National Environmental Policy
NCS	National Conservation Strategy

NDMA	National Disaster Management Authority
NOC	No Objection Certificate
Ohms	Unit for Electrical Resistance
OH&S	Occupational Health & Safety
OHSAS	Occupational Health and Safety Assessment Series (ISO 18001)
O&M	Operation & Maintenance
PEPA	Punjab Environmental Protection Act (1997)
PEQS	Punjab Environmental Quality Standards
P&D	Planning and Development Department
PEL	Permissible Exposure Limit
PM_{10}	Particulate Matter (10 micron)
PTW	Permit to Work
PPE	Personnel Protective Equipment
PVC	Polyvinyl Chloride
QC	Quality Control
RCD	Residual Current Devices
RRUDP	Ravi River Front Urban Development Project
RUDA	Ravi Urban Development Authority
SC	Supervision Consultant
STDs	Sexually Transmitted Diseases
SOPs	Standard Operating Procedures
So_x	Oxides of Sulphur
TBTs	Tool Box Talks
TMP	Traffic Management Plan
VICS	Vehicle Inspection & Certification System
WtE	Waste to Energy
WWTPs	Wastewater Treatment Plants
WMP	Waste Management Plan

Important Definitions

Environment: The 'environment' has been defined in the Environment Protection Act as: (a) air, water and land; (b) all layers of the atmosphere; (c) all organic and inorganic matter and living organisms; (d) the ecosystem and ecological relationships; (e) buildings, structures, roads, facilities and works; (f) all social and economic conditions affecting community life; and (g) the interrelationships between any of the factors specified in sub-clauses 'a' to 'f'.

Hazard: A hazard is any source of potential damage, harm or adverse health effects on something or someone. Basically, a hazard is the potential for harm or an adverse effect (for example, to people as health effects, to organizations as property or equipment losses, or to the environment).

Occupational Risk: The term "occupational risk" refers to likelihood that an injury or illness will occur as a result of exposure to workplace hazards. The idea of occupational risk exists upon two axes: The first is the probability that a given injury or illness will occur, and the second is that injury or illness' potential severity.

Occupational Injury: An occupational injury is defined as any personal injury, disease or death resulting from an occupational accident. An occupational injury is therefore distinct from an occupational disease, which is a disease contracted as a result of an exposure over a period of time to risk factors arising from work activity.

Worker's Compensation: It is a form of employer insurance coverage that pays benefits to workers who are injured or become disabled as a result of their job.

Safety: The state of being safe; freedom from the occurrence or risk of injury, danger, or loss, the quality of averting or not causing injury, danger, or loss. a contrivance or device to prevent injury or avert danger. Also called lock, safety catch, and safety lock.

Policy: A law, regulation, procedure, administrative action, incentive, or voluntary practice of governments and other institutions. Policy decisions are frequently reflected in resource allocations. Health can be influenced by policies in many different sectors.

Stakeholder: Any individual, group, or party that has an interest in an organization and the outcomes of its actions. Common examples of stakeholders include employees, customers, suppliers, communities, and government departments etc.

IEE/EIA: "EIA" means an Environmental Impact Assessment as defined in clause (xi) Section 2 of the Act; 1997. (d) "IEE" means an Initial Environmental Examination as defined in clause (xxiv) Section 2 of the Punjab Environmental Protection Act (PEPA); 1997.

HSE (Health, Safety and Environment): A set of processes and procedures identifying potential hazards to a certain environment, developing best practices to reduce or remove those hazards, and then training employees for accident prevention, accident response, etc.

Risk level: The risk level can be low, moderate or high. Each enterprise risk has a risk level based on the impact and likelihood ranking of the risk. The risk level provides the basis for prioritization and action.

Hazardous Substance: A hazardous substance can be any substance, whether solid, liquid or gas, that may cause harm to your health. Hazardous substances are classified on the basis of their potential health effects, whether acute (immediate) or chronic (long-term). Hazardous substances can be encountered either during the sampling or in the working environment where the sampling is being conducted.

Corrective Action Plan (CAP): A Corrective Action Plan is a method of documenting a problematic situation, identifying its root cause and clearly laying out a way of correcting the issue.

Injury: An injury is any physiological damage to the human body caused by immediate physical stress. An injury can occur intentionally or unintentionally and may be caused by blunt trauma, penetrating trauma, burning, toxic exposure, asphyxiation, or overexertion. An injury is damage to the body. It is a general term that refers to harm caused by accidents, falls, hits, weapons and more.

Climate Change: Climate change is the long-term increase in the earth's average surface temperature and the large-scale changes in global, regional, and local weather patterns that result from that increase, caused by a significant increase in the levels of greenhouse gases that are produced by the use of fossil fuels.

Greenhouse Gas: Any gas that has the property of absorbing infrared radiation (net heat energy) emitted from Earth's surface and reradiating it back to Earth's surface, thus contributing to the greenhouse effect. Carbon dioxide, methane, and water vapour are the most important greenhouse gases.

Landscaping: Landscaping can help soften spaces between buildings, can provide a route for people, can provide space for gardening and also help improve environmental quality. A well maintained and beautifully designed landscape design can attract people to the site which helps to create a positive impact on the property.

Biodiversity: The term “biodiversity” refers to the variety of living organisms. Biodiversity brings together the different species and forms of life (animal, plant, entomological and other) and their variability, that is to say, their dynamics of evolution in their ecosystems.

Ambient Air: Ambient air is atmospheric air in its natural state. It is what we breathe when the atmosphere is not contaminated by airborne pollutants. The composition of ambient air varies depending on the elevation above sea level as well as human factors such as the level of pollution.

Effluent: It means any material in solid, liquid or gaseous form or combination thereof being discharged from industrial activity or any other source and includes a slurry, suspension or vapour.

Noise: Noise pollution is unwanted or excessive sound that can have deleterious effects on human health, wildlife, and environmental quality.

Emission: An emission is something that has been emitted—released or discharged. In general, emissions consist of things like gas, liquid, heat, sound, light, and radiation. Emissions can come from natural sources or from anthropogenic activities like machines.

Pollutant: A pollutant is a substance that is present in concentrations that may harm organisms (humans, plants and animals) or exceed an environmental quality standard. The term is frequently used synonymously with contaminant.

Permissible Limits: Permissible Exposure Limit (PEL) is the legal limit for maximum concentration of any chemical in the air to which a worker may be exposed continuously for eight hours without any danger to health and safety.

Heritage: Heritage is the full range of our inherited traditions, monuments, objects, and culture. Most important, it is the range of contemporary activities, meanings, and behaviors that we draw from them. Heritage includes, but is much more than preserving, excavating, displaying, or restoring a collection of old things.

Seismicity: Seismicity is the worldwide or local distribution of earthquakes in space, time, and magnitude. More specifically, it refers to the measure of the frequency of earthquakes in a region—for example, the number of earthquakes of magnitude between 5 and 6 per 100 square km (39 square miles).

Landfill: A landfill site, also known as a tip, dump, rubbish dump, garbage dump, or dumping ground, is a site for the disposal of waste materials which may be the systematic burial of the waste with daily, intermediate and final covers. Landfill sites are used for waste management purposes, such as temporary storage, consolidation and transfer, or for various stages of processing waste material, such as sorting, treatment, or recycling.

Sustainable: Sustainability means meeting our own needs without compromising the ability of future generations to meet their own needs. In addition to natural resources, we also need social and economic resources.

Ecology: Ecology is the study of the environment, and helps us understand how organisms live with each other in unique physical environments.

Municipal Solid Waste: It includes sewage, refuse, garbage, waste from abattoirs, sludge and human excreta and the like.

Wastewater Treatment Plant: A Wastewater Treatment Plant is a facility in which a combination of various processes (e.g., physical, chemical and biological) is used to treat wastewater and remove pollutants.

Indigenous species: A biological taxon (genus, species, subspecies, variety, etc.) native to a particular area or region or ecosystem; can be found naturally in other areas.

Safety sign: Safety signs are a type of sign designed to warn of hazards, indicate mandatory actions or required use of Personal protective equipment, prohibit actions or objects, identify the location of firefighting or safety equipment, or marking of exit routes etc.

Warning sign: It is to warn against dangerous and prohibited actions in a certain area and to highlight safeguards and procedures that must be followed, or equipment that must be worn. It draws attention to a nearby hazard or potentially dangerous situation by directing people towards essential safety gear and fire safety equipment.

First Aid: *First aid* is the first and immediate assistance given to any person with either a minor or serious illness or injury, with care provided to preserve life.

Carcinogenic: A chemical substance or a mixture of chemical substances which induce cancer or increase its incidence.

Flammable: It is capable of being easily ignited and of burning quickly.

Risk Assessment: The purpose of risk assessments is ultimately to improve workplace health and safety. But to achieve this, the risk assessment process needs to identify workplace hazards and reduce or eliminate the risks they pose.

Integrated Solid Waste Management: Integrated solid waste management refers to the strategic approach to sustainable management of solid wastes covering all sources and all aspects, covering generation, segregation, transfer, sorting, treatment, recovery and disposal in an integrated manner, with an emphasis on maximizing resource use efficiency.

Pollution: It means the contamination of air, land or water by the discharge or emission or effluents or wastes or air pollutants or noise or other matter which either directly or indirectly or in combination with other discharges or substances alters unfavorably the chemical, physical, biological, radiation, thermal or radiological or aesthetic properties of the air, land or water or which may, or is likely to make the air, land or water unclean, noxious or impure or injurious, disagreeable or detrimental to the health, safety, welfare or property of persons or harmful to biodiversity;

1. Vision and Mission Statement

1.1. HSE Vision

To achieve Health, Safety and Environment (HSE) preeminence, ensuring risk of harm levels to workers at minimum, associated people, assets and the environment where we work and operate.

1.2. HSE Mission

- In accordance with the legal framework, Systemizing and implementing the policies, procedures and recommendations of Environmental Impact Assessment (EIA) and Initial Environmental Examination (IEE) on RUDA projects.
- Apply Continuous improvement practices in the HSE performances of all departments and implanting HSE driven Culture.
- Build strong HSE knowledge, awareness and capabilities among all the stakeholders.
- Ensuring emission reduction measures to minimize environmental impacts.

1.3. Achievement of Sustainable Development Goals (SDGs)

1.3.1. Goal 5 Gender Equality

Achieve gender equality and empower all women and girls. RUDA will be equal opportunity employer

1.3.2. Goal 6 Clean Water and Sanitation

Ensure availability and sustainable management of water and sanitation for all. RUDA will install multiple Wastewater Treatment Plants as per master plan.

1.3.3. Goal 7 Affordable and Clean Energy

Ensure access to affordable, reliable, sustainable and modern energy for all. RUDA is enthusiastic to promote clean energy by conserving non-renewable energy resources and adopting clean technologies.

1.3.4. Goal 8 Decent Work and Economic Growth

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all. RUDA is playing important role in economic growth of the country by providing new job opportunities and sustainable development projects.

1.3.5. Goal 9 Industry, Innovation, and Infrastructure

Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation. RUDA is building Industrial zones with environment friendly technologies by providing suitable infrastructure.

1.3.6. Goal 11 Sustainable Cities and Communities

Make cities and human settlements inclusive, safe, resilient, and sustainable. RUDA is established to develop safe and sustainable city based on flood protection and adopting clean technology.

1.3.7. Goal 13 Climate Action

Take urgent action to combat climate change and its impacts. RUDA will take lead to combat climate change impacts by plantation, clean industrial emissions, charging stations, lowering traffic congestion points etc.

1.3.8. Goal 15 Life on Land

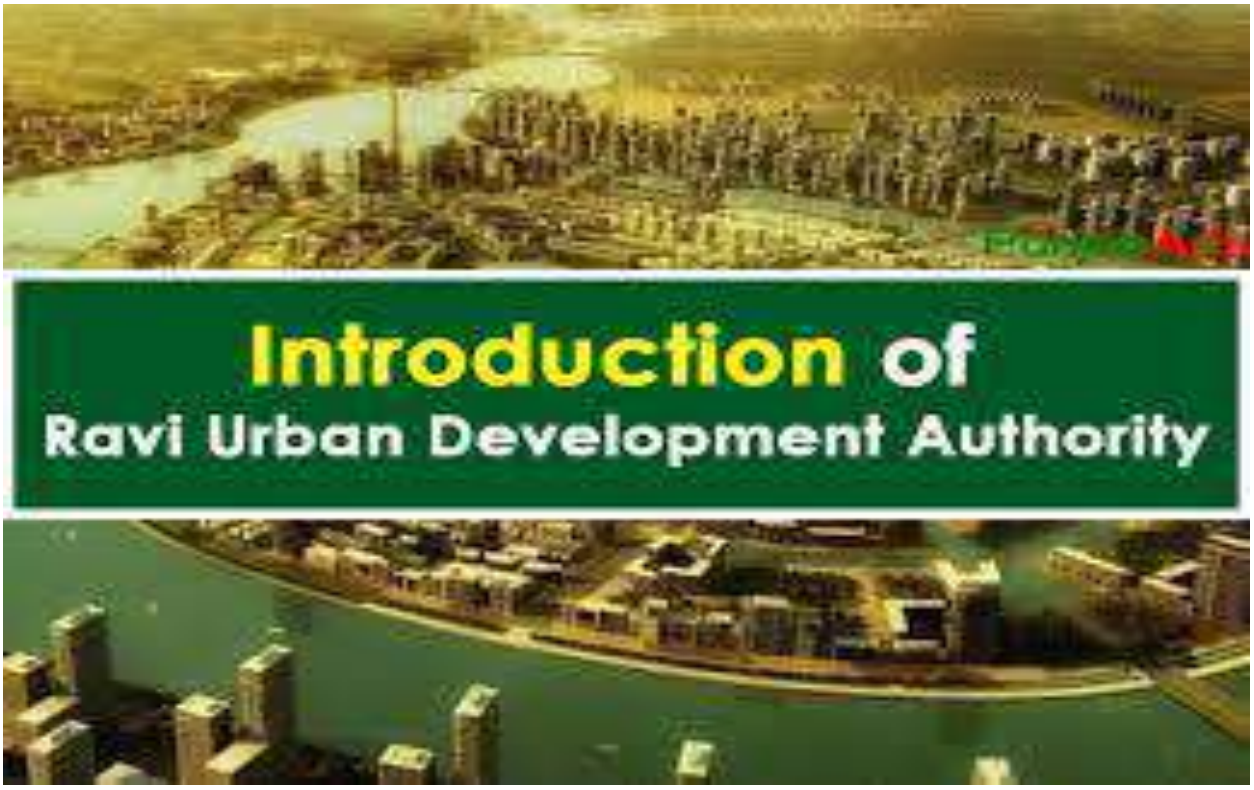
Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss. RUDA is committed to perform for conservation of the ecosystems, forest areas in Lahore and Sheikhupura.

2. HSE policy

Ravi Urban Development Authority (RUDA) shall operate as a best authority with dynamic nature of work that commit to sustainable performance in HSE and shall strive and ensured to achieve zero injury from all stakeholders.

In order to achieve this, RUDA shall

- Obey all applicable Health, Safety and Environment (HSE) standards and comply with all applicable regulations and recommendations of EIAs and IEEs.
- Establish stakeholder's rights for HSE matters through visible leadership at every level (Construction and Operational Phase).
- Manage risk associated with Construction and Operational works proactively to ensure that ill health, injuries and environmental impacts are prevented.
- Ensure reliable Emergency Response System (ERS) to be in place during construction phase and in all projects operations through Emergency Response Plan (ERP).
- Establish strong HSE monitoring system to assess level of compliance with all the applicable regulations and ensure Corrective Action Plan (CAP) implementation.
- Communicate this policy to all stakeholders and provide training, resources and other support to encourage responsibility that upholds this policy.
- Encourage all employees and stakeholders' participation and consultation on HSE related issues.


Introduction of
Ravi Urban Development Authority

3. Ravi Urban Development Authority (RUDA)

3.1.Introduction

Lahore is the second largest city of Pakistan and capital of the Punjab Province which is being rapidly urbanized in recent years and has become regional urban center of key commercial activities, with financial, industrial and socio-economic significance. Unfortunately, the urbanization remained unchecked and unregulated, due to which the current population of Lahore City is now being estimated approx. 11.13 million (2017 Census Report). Currently, the city is facing the phenomena of urban sprawl and in absence of adequate planning; there is expansion of urban areas bulging outwards with continuous increase in boundary of the city. A projection is that by year 2025, there will be almost 15 million people living in the city exerting pressure on existing infrastructure. The unplanned expansion of the city, competing land use and exponential population growth with the rate up to 3.72 % had put immense pressure on existing infrastructure of Lahore causing traffic congestion and pollution putting Lahore at the top of the most polluted cities list of the world. With continuous increase in urban growth along the outstretch region of Lahore, there is tremendous need for new housing and commercial units which fulfill all regulatory requirements to control and minimize pollution and help combating climate change.

In view of City's projected population and issues related to the polluted water of River Ravi, and to recharge groundwater, Government of the Punjab (GoPb) has planned Ravi River Front Urban Development Project (RRUDP) on both banks of the river (46 KM long stretch) that is contiguous to Lahore District's Northern and Western boundaries. This Project will convert the dying River Ravi into a perennial fresh water body along with high quality urban development on both banks of the river (5Km each) for a stretch of approximately 46 KM from Ravi Syphon to Mohlanwal.

3.2.Scope of HSE Manual

RUDA has developed this document to meet the Project requirements for the improvement of HSE standards and needs. This manual has been established to identify the strategy of RUDA towards HSE management.

This manual shall be applicable to RUDA Headquarter, area under RUDA Jurisdiction and Project Sites.

This document describes the RUDA HSE policy in line with the statutory requirements. The purpose of this plan is to identify the potential impacts and to develop a mechanism for the better

management of HSE issues relating to the projects. This plan will define the HSE guidelines established by the Authority to provide all personnel with safe operating practices and awareness for the work they perform in the course of their duties during construction activities on different type of projects with different scale of risk levels.

3.3.Objectives of HSE Manual

The main objective of this manual is to strictly enforce the provisions and mitigation measures for potential impacts throughout the entire construction and operational period. Other objectives are:

- Preventing accidents, diseases and harmful impacts arising from construction Sites, Operational Industrial Zones, contaminated water and Business areas.
- Providing means of analysing from the safety point of view, health and working conditions, construction processes, activities, technologies and operations, and of taking appropriate measures of planning, control and enforcement.
- Implement training programs that support the achievement of the personnel competency in relation to HSE.

4. Statutory Requirements

This section provides an overview of the policy framework and legislation that applies to control the HSE consequences as a result of proposed project implementation and operations. The project needs to comply with all the applicable environmental and HSE policies, laws, guidelines, Acts and legislations of Government of Pakistan and Provincial Government as the case may be.

The summary of major relevant strategies, policies, Acts and legislation from environmental perspective are briefly described in Tables 4.1 & 4.2 below:

Table-4.1: Main Strategies/Policies Related to Health, Safety and Environment & Relevance to the Project

Sr. No.	Policy/Strategy	Brief Coverage	Relevance to Project
1	National Conservation Strategy (NCS), 1992	Pakistan National Conservation Strategy (NCS), which was approved by the federal cabinet in March 1992, is the principal policy document on environmental issues in the Country. The NCS outlines the Country's primary approach towards encouraging sustainable development, conserving	The core areas that are relevant in the context of the proposed project are pollution prevention during construction, conserving biodiversity and supporting forestry and plantation. RUDA will ensure

Sr. No.	Policy/Strategy	Brief Coverage	Relevance to Project
		natural resources and improving efficiency in the use and management of resources. The NCS has 68 specific programs in 14 core areas in which policy intervention is considered crucial for the preservation of Pakistan's natural and physical environment.	implementation without compromising conservation and protection of environment.
2	National Environmental Policy (NEP), 2005	In March 2005, GoP launched its National Environmental Policy, which provides a framework for addressing the environmental issues. Section 5 of the policy commits for integration of environment into development planning as instrument for achieving the objectives of National Environmental Policy. It also provides broad guidelines to the Federal Government, Provincial Governments, Federally Administered Territories and Local Governments to address their environmental concerns and to ensure effective management of their environmental resources.	Clause (b) of sub-section 5.1 states that Environmental Assessment related provisions in Environmental Protection Act, 1997, will be diligently enforced for all development projects. RUDA will complete Assessment Reports as per requirements.
3	National Climate Change Policy, 2012	The National Climate Change Policy provides a framework for addressing the issues that Pakistan faces or will face in future due to the changing climate. In view of Pakistan's high vulnerability to the adverse impacts of climate change, in particular extreme events, adaptation effort is the focus of this policy document. The vulnerabilities of various sectors to climate change have been highlighted and appropriate adaptation measures spelled out. The policy covers measures to address issues in various sectors such as water, agriculture, forestry and biodiversity etc. Notwithstanding the fact that Pakistan's contribution to global Greenhouse Gas (GHG) emissions is	This policy document is a 'living' document and will be reviewed and updated regularly to address emerging concepts and issues in the ever-evolving science of climate change. This policy will accelerate due to the possible emissions from the construction machinery and equipment.

Sr. No.	Policy/Strategy	Brief Coverage	Relevance to Project
		very small, its role as a responsible member of the global community in combating climate change has been highlighted by giving due importance to mitigation efforts in sectors such as energy, forestry, agriculture and livestock. Furthermore, appropriate measures relating to disaster preparedness, capacity building, institutional strengthening; technology transfer; introduction of the climate change issue in higher education curricula; ensuring environmental compliance through IEE and EIA in the development process; addressing the issue of deforestation and illegal trade in timber; promoting Clean Development Mechanisms (CDM); and raising Pakistan's stance regarding climate change at various international forums, have also been incorporated as important components of the policy. The policy thus provides a comprehensive framework for the development of Action Plans for national efforts on adaptation and mitigation.	
4	National Drinking Water Policy, 2009	The National Drinking Water Policy provides a framework for addressing the key issues and challenges facing Pakistan in the provision of safe drinking water to the people. Drinking water is the constitutional responsibility of the provincial governments and the specific provision function has been devolved to specially created agencies in cities and Town and Tehsil Municipal Administrations under the Local Government Ordinance 2001.	This policy is applicable for the proposed project during construction phase in terms of regular water quality monitoring. The River Channelization project will work for Groundwater and aquifer recharge.
5	National Water Policy, 2018	The National Water Policy aims at efficient management and conservation of existing water resources, optimal	The core areas that are relevant in the context of the proposed project are

Sr. No.	Policy/Strategy	Brief Coverage	Relevance to Project
		development of potential water resources, steps to minimize time and cost overruns in completion of water sector projects, improving urban water management by increasing system efficiency and reducing non-revenue water through adequate investments to address drinking water demand, sewage disposal, handling of wastewater and industrial effluents; equitable water distribution in various areas and canal commands, measures to reverse rapidly declining groundwater levels in low-recharge areas, increased groundwater exploitation in high-recharge areas, effective drainage interventions to maximize crop production, improved flood control and protective measures, steps to ensure acceptable and safe quality of water, minimization of salt build-up and other environmental hazards in irrigated areas, institutional reforms to make the managing organizations more dynamic and responsive.	drinking water demand, sewage disposal and handling of wastewater. The installation of multiple Wastewater Treatment Plants (WWTPs) will aid to provide potable water to the residents, parks and the industry.
6	National Forest Policy, 2015	The goal of this policy is to expansion, protection and sustainable use of national forests, protected areas, natural habitats and watersheds for restoring ecological functions, improving livelihoods and human health in line with the national priorities and international agreements. In line with the Federal functions of national policy, planning and implementation of international agreements, specific objectives of the National Forest Policy include: Promoting ecological, social and cultural functions of forests through sustainable management and use of forest produce including wood and non-wood forest products; Implementing a national level mass	The proposed Project does not involve any protected areas, natural habitats and watersheds. However, urban forestry triggers the Policy due to presence of roadside plantation. Proper landscaping and green areas will be designed to upgrade the aesthetic value of the industrial zone and which will also play vital role in increased green cover. The forests in the jurisdiction will be revitalized to address climate change, heat wave and smog issues.

Sr. No.	Policy/Strategy	Brief Coverage	Relevance to Project
		afforestation programme to expand and maintain optimum forest cover; Maximizing forest areas by investing in available communal lands/ shamlat, and Guzara forests and urban forestry; Facilitating and harmonizing inter-provincial movement, trade and commerce of wood and non-wood forest products through the Federal Forestry Board; Inter-linking natural forests, protected areas, wetlands and wildlife habitats to reduce fragmentation; Enhancing role and contribution of forests in reducing carbon emissions and enhancing forest carbon pools; Facilitating implementation of international conventions and agreements related to Forestry, Wetlands, Biodiversity and Climate Change; and Promoting standardized and harmonized scientific forest planning, research and education including for community-based management.	
7	Pakistan Labour Policy, 2010	The main objective of the Labour Policy, 2010 is the social and economic well-being of the labour of Pakistan. The Labour Policy, 2010 has following 4 parts: Legal Framework; Advocacy: rights of workers and employers; Skill development and employment; and Manpower export	The labour force will be employed for construction of the proposed Project. The provision of policy will apply to all the employed labourers.
8	National Disaster Risk Reduction Policy, 2013	NDMA, being the lead focal agency for disaster preparedness and management, has therefore, embarked upon formulation of a comprehensive National Disaster Risk Reduction Policy through wider consultations with all stakeholders including all provinces, state of	This policy will elicit if any unforeseen natural and man-made disaster occurs during construction and operational phase.

Sr. No.	Policy/Strategy	Brief Coverage	Relevance to Project
		AJ&K and regions. This policy covers disasters risk reduction in a more holistic way and introduces a proactive and anticipatory approach by laying special emphasis on risk assessment and prevention.	
9	National Action Plan for COVID-19 Pakistan	Government of Pakistan has launched the National Action Plan for COVID-19 Pakistan to combat the challenge of prevailing virus, also available at https://www.nih.org.pk/wp-content/uploads/2020/03/COVID-19-NAP-V2-13-March-2020.pdf. The Government of Pakistan has launched the real-time data portal for COVID-19 http://covid.gov.pk/. These measures are mostly relating to the containment and awareness and capacity building. Besides this COVID-19, daily situation report is also available at https://www.nih.org.pk/wp-content/uploads/2020/04/COVID-19-Daily-Updated-SitRep-03-April-2020.pdf.	This Action Plan for COVID-19 is applicable to the proposed project as it is launched during this pandemic. All SOPs will be followed to combat the pandemic.

Table-4.2-Main Legislation/Acts Related to Health, Safety and Environment & Relevance to the Project

Sr. No.	Act	Brief Coverage	Relevance to Project
	Legal Requirement for the project commencement: Punjab Environmental Protection Act (PEPA), 1997 (Amended, 2012 & 2017)	The Punjab Environmental Protection Act, 1997 (Amended, 2012 & 2017) is comprehensive legislation and provides the legislative framework for protection, conservation, rehabilitation and improvement of the environment. The notable points of the law are:	The provision of the Act is applicable to the proposed Project of the proponent for conducting an IEE/EIA according to Section 12 and to obtain environmental approval from EPA. Section 11 of the Act is applicable in terms of compliance with Punjab Environmental Quality

Sr. No.	Act	Brief Coverage	Relevance to Project
		No proponent of a project shall commence construction or operation unless he has filed an IEE/EIA with the Provincial Environment Agency, and has obtained an approval before commencement; Prohibition of certain discharges or emissions; Punjab Environmental Quality Standards (PEQS) for wastewater, air emissions and noise; and Provincial Government can issue notices on non-compliances and enforce them to protect the environment to control pollution. In the recent amendment of 2012, legislative powers related to environment and ecology are given to provincial governments from the Federal government. The provinces are required to enact their own legislation for environmental protection. Other amendments include enhancing penalties for violations. For the proposed Project, Environmental Protection Department (EPD)/Environment Protection Agency (EPA), Government of the Punjab (GoPb) is the concerned authority. The capability of regulatory institutions for Environmental assessments is ultimately responsible for	Standards (PEQS). Similarly, Section 13 of the Act prohibits the import of hazardous waste. The provisions of Section 16 are also applicable to comply with the discharge or emission of any effluent, waste, air pollutant or noise or disposal of waste or handling of hazardous substance. Under Section 17, penalties will apply if anyone fails to comply with the provisions of Section 11, 12, 13 and 16.

Sr. No.	Act	Brief Coverage	Relevance to Project
		the success of environmental management and makes development projects environmentally sound and sustainable.	
	Pakistan Environmental Protection Agency, (Review of IEE and EIA) Regulations, 2000	These regulations set out: Key policy and procedural requirements for filing an IEE/EIA; The purpose of environmental assessment; The goals of sustainable development; The requirement that environmental assessment be integrated with feasibility studies; The responsibilities of proponent; Duties of responsible authorities; Provides schedules of proposals that the project requires either IEE or an EIA; The environmental screening process of the projects under schedule I, II, III and IV; Raising of queries by EPA, If any. Addressing the queries properly by the proponent. Site Visits, Site Investigation Report and Committee of Experts Recommendations. The procedure for the environmental approval for filing the case with the concerned EPA for the granting of the NOC.	The provisions of these regulations are applicable for environmental screening of the project, which implies that, an –IEE/EIA is required for the proposed project. The process described in the regulations will be followed by RUDA to comply with the procedure to file an IEE/EIA with Punjab EPA and to understand its review process along with timelines to be followed.
	Punjab Environmental Quality Standards	PEQS promulgated recently in 2016. Specified standards	All projects to be implemented in Punjab must

Sr. No.	Act	Brief Coverage	Relevance to Project
	(PEQS), 2016	under PEQS are for: Drinking Water; Ambient Air; Noise; Industrial Gaseous Emissions; Municipal and Liquid Industrial Effluents; Motor vehicle exhaust and noise; and Treatment of Liquid and Bio-Medical Waste.	conform to PEQS during all the phases i.e., construction and operation.
	Guidelines for the Preparation and Review of Environmental Reports, 1997	These guidelines describe the format and content of IEE/EIA reports to be submitted to PEPA for obtaining NOC/approval. The guidelines present: The environmental assessment report format; Assessing impacts; Mitigation and impact management and preparing an environmental management plan; Reporting; Review and decision making; Monitoring and auditing; and Project Management.	The guidelines are applicable for the preparation of the IEE/EIA.
	Guidelines for Environmental Assessment	Pak-EPA has published a set of environmental guidelines for conducting environmental assessments and the environmental management of different types of development Projects. The guidelines that are relevant to the proposed Project are listed below. Guidelines for the Preparation and Review of Environmental Reports, Pakistan Environmental	The guidelines are applicable for the preparation of the IEE/EIA.

Sr. No.	Act	Brief Coverage	Relevance to Project
		Protection Agency, 1997; Guidelines for Public Consultation, Pakistan Environmental Protection Agency, May, 1997; and Sectoral Guidelines: Pakistan Environmental Assessment Procedures, Pakistan Environmental Protection Agency, October 1997.	
	Ravi Urban Development Authority (RUDA) Act 2020	The Ravi Urban Development Authority Act 2020 (the "Act 2020") was promulgated to establish Ravi Urban Development Authority (the "Authority") for carrying out the purposes of the Act ibid. The Act 2020 focuses on the administrative, procedural and operational activities of the Authority with certain prohibitions attached to its functions. The preamble of the Act 2020 is exhaustive in nature pointing out the entire actions in public interest for the purpose of comprehensive system of planning and development in the area specified in Master Plan of the Project so as to improve the quality of life as per legislative objectives and further to establish an integrated modern and regional development approach and a continuing process of planning and development to achieve the highest environmental standards, quality of life and modern standard facilities so as to make a healthy and	This Act is directly related to the establishment of RUDA and Act is the guideline for the performance of its functions under legal domain. Section 24, deals with the protection and conservation of the environment.

Sr. No.	Act	Brief Coverage	Relevance to Project
		prosperous community in the designated area duly determined by the Government to rehabilitate water aquifer and the dying Ravi River into fresh perennial water body with a state-of-the-art water front and urban development on reclaimed and adjoining lands. The objectives of the Act 2020 are to provide quality life along with developed infrastructure and modern standard facilities.	
	RUDA Industrial Zone & Estate Building Regulations-2021	These Regulations may be called RUDA Industrial Zone & Estate Building Regulations-2021 and shall come in to force as and when notified by Ravi Urban Development Authority. These Regulations shall be applicable within the area marked and declared as industrial zone / Estate by RUDA in the land use zone Map of Strategic Development Plan. The design and Construction of Building (s) in the zone shall be in conformity with these regulations. RUDA shall have powers to make, amend, alter or any addition in these regulations and provisions at any stage.	These regulations may apply within the jurisdiction due to presence of existing industries and for future development of industrial Zone and future Estate building (s).
	Pakistan Climate Change Act, 2017	This Act aims to meet obligations under international conventions relating to climate change and to provide for adoption of comprehensive adaptation and mitigation policies,	This Act will accelerate due to the anticipated emissions from the construction machinery. All measures will be taken to minimize the emissions.

Sr. No.	Act	Brief Coverage	Relevance to Project
		plans, programs, projects and other measures required to address the effects of climate change and for matters connected herewith and ancillary thereto.	
	National Clean Air Act, 2000	The Act aims to control vehicular emissions, pollution from industry, and indoor air pollution in rural and urban areas.	This Act will trigger if vehicles and machinery used for construction activities emanate air pollutants above the permissible limits. Vehicular pollution will be restricted by using modern technology.
	Land Acquisition Act (LAA), 1894 Including Later Amendments	The Land Acquisition Act, 1894, is a "law for the acquisition of land needed for public purposes and for companies and for determining the amount of compensation to be paid on account of such acquisition". The exercise of the power of acquisition has been limited to public purposes.	This Act is applied only where land acquisition is acquired under this Act. RUDA is also using Land procurement model including Exemption model.
	Punjab Wildlife Act, 1974	The Punjab Wildlife Act (1974) is developed for the regulation of activities relating to protection, conservation and management of wildlife in Punjab.	The proposed project involves the cutting of trees where unavoidable, which will be managed through extensive tree plantation, therefore, the provisions of this law will be helpful. RUDA will maximize tree plantation in its jurisdiction by expediting current activities.
	Punjab Plantation and Maintenance of Trees Act, 1974	The Punjab Plantation and Maintenance of Trees Act, (1974) regulates tree plantations and enforces measures for their protection.	The requirements of this Act are applicable in terms of planting new trees and their maintenance by the occupier of the existing land who would have the physical possession. Rakh Jhok forest will be

Sr. No.	Act	Brief Coverage	Relevance to Project
			restored by planned plantation in the project. Other forests will also be conserved and protected.
	Pakistan Antiquities Act 1975 & Punjab Antiquities Amendment Act 2012	The Punjab Antiquities Amendment Act, 2012 is adopted from the Pakistan Antiquities Act of 1975 with a few minor changes. The Antiquities Act, 1975 (amended in 1990) states the following: "Ancient" is any object that is at least 75 years old; All accidental discoveries of artefacts must be reported to the Federal Department of Archaeology; The Government is the owner of all buried antiquities discovered on any site, whether protected or otherwise; All new construction within a distance of 200 feet from protected antiquities is forbidden; No changes or repairs can be made to a protected monument, even if it is owned privately, without approval of the responsible authorities; and The cultural heritage laws of Pakistan are uniformly applicable to all categories of sites regardless of their state of preservation and classification as monuments of national or world heritage.	The law will be applicable to the project mainly due to its two provisions: According to the law, any construction activity within 61 m or 200 ft. of protected antiquities, are prohibited. The provisions of this Act would also be applicable, if any accidental archaeological discoveries may occur during the excavation works for the construction of proposed Project.
	The Punjab Special Premises (Preservation), Ordinance, 1985	The Punjab Special Premises (Preservation), Ordinance (1985) provides the legal	The provision of the ordinance is applicable for protection and conservation

Sr. No.	Act	Brief Coverage	Relevance to Project
		framework for preservation of premises of historical, cultural, archaeological, and architectural value in the Punjab province. This legislation empowers the provincial government to notify heritage sites and sites of cultural and archaeological importance and to prohibit implementation of developmental schemes or new constructions within the notified areas around the special premises. So far 246 sites stand notified under the Punjab Ordinance.	of special premises declared by department of Youth Affairs, Sports, Archeology & Tourism, Punjab. The ordinance is applicable in terms of land acquisition, entrance, exploitation and destruction of special premises near site.
	Pakistan Penal Code (PPC), 1860	The Code deals with the offences where public or private property or human lives are affected due to intentional or accidental misconduct of an individual or organization. The Code also addresses control of noise, noxious emissions and disposal of effluents.	The provisions of the Penal Code, 1860 are applicable to the project in terms of penalties for affecting human lives and public property. It also addresses the control of noise, air emissions and effluent disposal.
	Labour Laws as part of Constitution of Pakistan 1973,	The Constitution of Pakistan contains a range of provisions with regards to labour rights, in particular: Article 11 of the Constitution prohibits all forms of slavery, forced labour and child labour; Article 17 provides a fundamental right to exercise the freedom of association and the right to form unions; Article 25 lays down the right to equality before the law and prohibition of discrimination on the	The labour laws will be relevant as it would deal with employment of labour for the construction of proposed project. Following are the major labour laws which are applicable to the project: Bonded Labour System (Abolition) Act, 1992 Employment of Child Act, 1991 Minimum Wages Ordinance, 1961 Industrial Relations Act,

Sr. No.	Act	Brief Coverage	Relevance to Project
		grounds of sex alone; and Article 37(e) makes provision for securing just and human conditions of work, ensuring that children and women are not employed in vocations unsuited to their age or sex, and for maternity benefits for women in employment. Labour law is controlled at both provincial and national levels with compulsory employment agreements containing the terms set out by the labour laws. The labour laws are a comprehensive set of laws in Pakistan dealing with the following aspects: Contract of Employment; Termination of Contract; Working Time and Rest Time; Working hours; Paid Leave; Maternity Leave and Maternity Protection; Other Leave Entitlements; Minimum Age and Protection of Young Workers; Equality Pay Issues; Workers' Representation in the Enterprise; Trade Union and Employers Association Regulation; and Other Laws.	2010 West Pakistan Minimum Wages for Unskilled Workers' Ordinance, 1969
	Punjab Municipal Water Act, 2014	The basic aim of the Act is to recognize, regulate and manage present and future municipal water supply and sanitation services and to	This Act will elicit if there is misappropriation of water supply during construction activities. RUDA is going to provide best facility in this

Sr. No.	Act	Brief Coverage	Relevance to Project
		establish rights of access to basic water supply and basic sanitation, and to ensure conservation of water resources in the province. This Act is in draft stage.	regard.
	The Punjab Water Act, 2019	This Act ensures comprehensive management and regulation of water resources in the Punjab in the interest of conservation and sustainability.	This Act will be triggered for sustainable use of water required for construction purposes.
	Hazardous Substances Rules, 2003	The rule describes the procedure of handling, transportation and disposal of hazardous substances and hazardous waste. Inter alia, general safety precautions for handling hazardous substances as well as safety precautions for workers, and notification requirements in the event of an accident are described in these rules. Requirements for project waste management plans are also defined. These include a requirement for updating the plan every three years, the need to provide for management of hazardous waste in a manner that will prevent adverse environmental impacts and to ensure that hazardous and non-hazardous waste are not mixed.	This rule is applicable to the proposed project which will guide on hazardous waste handling, use and disposal during the construction stage.
	Punjab Environmental Protection (Motor Vehicles) Rules, 2013	Subject to the provisions of this act, and the rules and regulations, no person shall operate a motor vehicle from which air pollutants and noise are being emitted in an amount, concentration or	This Act will be elicited during construction and operational phase due to use of motor vehicles and associated generation of air pollutants and noise.

Sr. No.	Act	Brief Coverage	Relevance to Project
		level which is in excess of the Punjab Environmental Quality Standards (PEQS), or where applicable the standards established under clause (g) of subsection (1) of section 6 of the act.	
	ISO 18001 Occupational Health and Safety Assessment Series (OHSAS)	OHSAS 18001 is an Occupation Health and Safety Assessment Series for health and safety management systems to help organizations to control occupational health and safety risks. The OHSAS specifications are applicable to any institute that desires to establish an OH&S management system to eradicate or reduce risk to employees and other interested parties who may be exposed to the risks allied with the project activities. The construction of the proposed project may involve various health and safety issues to construction labour, therefore, these ISO 18001 guidelines will be applicable and pertinent.	It will be used as guidelines where deemed necessary and as opted during construction and operational phase to ensure health and safety of workers associated with the project activities.
	The Punjab Occupational Safety & Health Act, 2019	This Act entails provision of occupational safety and health of the workers at workplace and to protect them against risks arising out of the occupational hazards; to promote safe and healthy working environment catering to the physiological and psychological needs of the employees at workplace.	The Act will safeguard health and safety of the workers at workplace associated with the project activities during construction and operational phase to ensure health and safety of workers.
	Punjab Restriction on Employment of Children	According to the sub-section 11(a) of this Act, an occupier	This Act will restrict the contractor to hire skilled and

Sr. No.	Act	Brief Coverage	Relevance to Project
	Act, 2016	who employs or permits a child (person under the age of 15 years) to work in an establishment shall be liable to punishment with imprisonment for a term which may extend to six months, but which shall not be less than seven days, and a mandatory fine between 10,000 and 50,000 rupees.	unskilled labour under age 15.
	Punjab Protection of Women against Violence Act, 2016	The act is administered by federal government which provides guidelines for the provision of disaster management plans, offer necessary technical assistance to the Provincial Governments and Provincial Authorities as well for preparing their disaster management plans in case of any mishap.	This Act is valid to the subject project in case of any unseen situation and will ensure protection of women against any violence and harassment.
	Electricity Act, 1910	The Act provides a legal basis for distribution of Power. It enables a licensee to conduct operations for supply of electricity and binds the license to payment of compensation in respect of any damages caused during the construction, Operation and Maintenance (O&M) of Power distribution facilities.	This Act will restrict the contractor not to cause damage during construction of the power facilities.
	The Punjab Heritage Foundation Act, 2005	This act entails preservation, conservation, maintenance and rehabilitation of the Punjab Heritage through various means, including technical or financial assistance and to create awareness among the people for preservation of the Punjab Heritage.	This Act will deal with heritage sites present in and around the proposed project route.

Sr. No.	Act	Brief Coverage	Relevance to Project
)	The Punjab Emergency Services Act, 2006	It deals with the establishment of emergency service for a purpose of maintaining a state of preparedness to deal with emergencies, to provide timely response, rescue and emergency medical treatment to the affected persons and recommending measures to be taken by related organizations to avoid any emergency situation. It describes procedures to establish emergency service, emergency board, emergency fund, emergency ambulance and rescue vehicles, offence and punishment, etc.	This Act will be helpful to the proposed project to provide timely response, rescue and emergency medical treatment to the affected persons during construction and operational phase of project.
)	Seismic Building Code of Pakistan 2007	This code stipulates the minimum requirements for seismic safety of building and structures and the provisions of the Building Code of Pakistan (Seismic Provisions-2007) shall apply for engineering design of buildings, like structures and related components. Construction of buildings shall be considered as violation of professional engineering work specified under clause (XXV) of Section 2 of the Act.	This Code is applicable to the proposed project as it includes the formation of structures earthquake proof. RUDA will promote construction of earthquake proof buildings promoting best construction practices.

5. Institutional and Correspondence Arrangements of Environment Directorate (HSE Implementation)

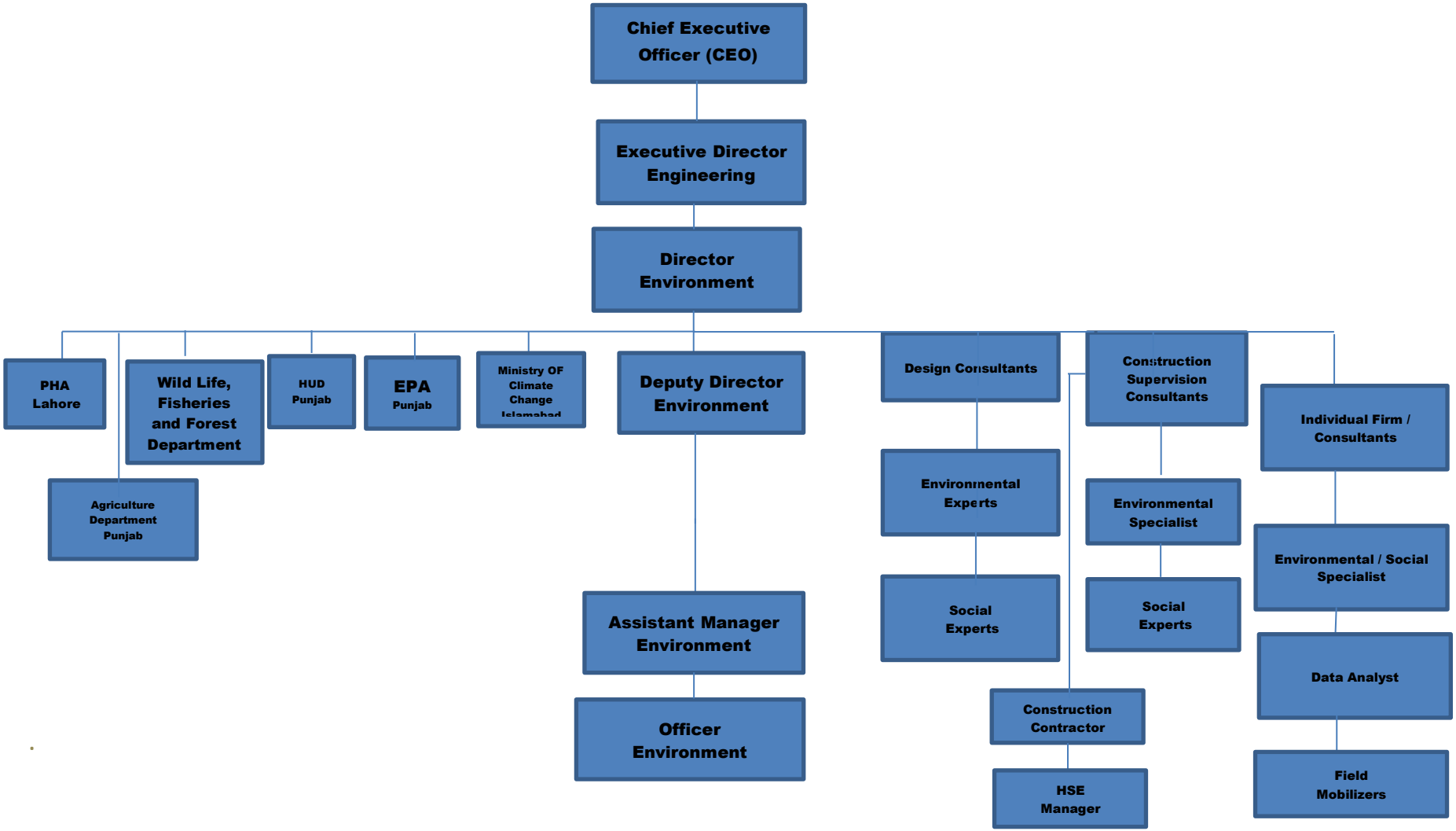


Fig 5.1 Institutional and Correspondence Arrangements of Environment Directorate

5.1.RUDA HIRA Process

Hazard Identification & Risk Assessment (HIRA) is a tool used in identification of risk, hazard and its management related to the potential. It can help in mitigation of the risk and further occurrence.

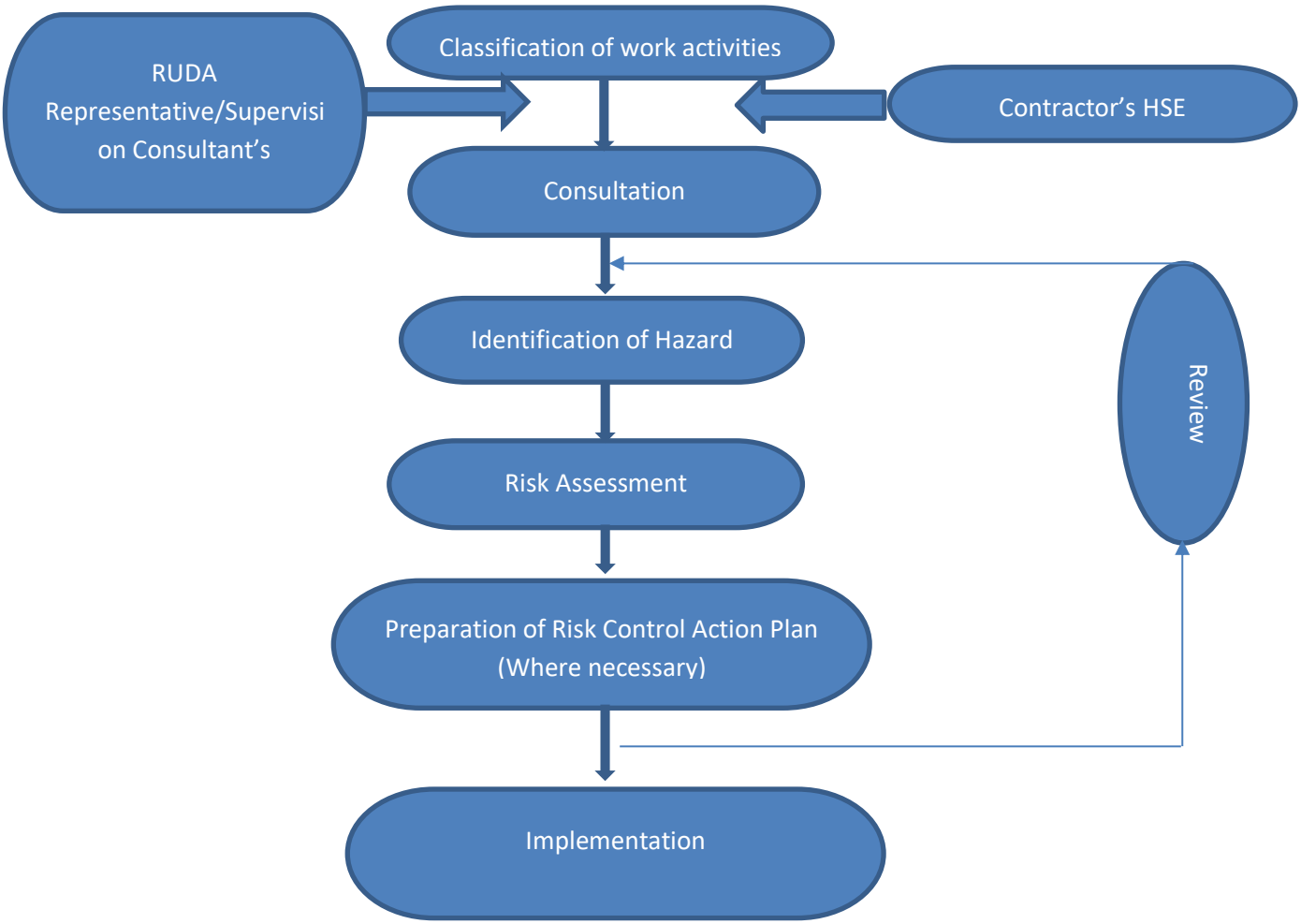


Fig 5.2 Flow chart for HIRA process

6. List of Development Projects/Activities

6.1. Development of Infrastructure in Jurisdiction of RUDA

RUDA intends to develop infrastructure in its jurisdiction which includes, Water supply and Sanitation facilities, Streets, Roads, Bridges, Flyover, Transmission lines, Utilities, Waste management including landfills and other infrastructural facilities related to sustainable urban development. There is a dire need to have high quality sub-urban development aimed at provision of quality services including availability and sustainable management of water and sanitation for all and infrastructure distribution networks to facilitate urban expansion in a sustainable way. It is need of the hour that a city should be developed with proper planning and regulated infrastructure, promoting regularized industrial zones, treatment of wastewater facilities, access roads to minimize congestion to reduce carbon foot prints, sanitary landfill sites to manage solid waste including Waste to Energy (WtE) project.

6.2.Development of Planned Housing Schemes

Urban sprawl along the outstretch region of Lahore, RUDA intends to develop sustainable

housing development which will promote renewable energy including solar lights.

Fig. 6.2.1 Ravi Chaharbagh

The society will also have water storage tanks, well established mechanized waste management systems, modern infrastructure and green belts along with green roof top management with special focus on wellbeing of the people. Chaharbagh would be the first housing scheme with focus on water conservation, promoting renewable energy, advanced waste management and extensive green areas.

Fig-6.2.2 Master Plan of Chaharbagh (Housing Project)

6.3. Ravi River Channelization Works (46KM)

Under RRUDP, river channelization is the proposed development project that converts dying River Ravi into perennial fresh water body along with high quality urban development on both banks of the river (5Km each) for a stretch of approximately 46 KM from Ravi Syphon to Mohlanwal to be developed in three phases. River Training works and channelization of about 46 KM stretch is planned with 3 barrages.

Fig-6.3.1 River Ravi Situation due to flood and pollution

The objective of River Training and Channelization is to protect River Ravi front from 1000 years ARI flood and also the channel is designed in a way that it would retain the character of a fresh water body and it should have adequate capacity to pass 1000 years return period. It will revitalize the river Ravi and improve the habitat and river ecology.

Fig-6.3.2 River Ravi future Condition after Channelization and Urban Development

6.4. Development of River Front

Ravi River Urban Development Project (RRUDP) was initiated with a vision to develop river front urban center of national and international importance. These cities have a theme which is shaping the new urban forms with modern and high-quality lifestyles as well as economic hub. Urban development and its management are critically linked with sound, comprehensive and strategic metropolitan level long term planning.

Fig-6.4.1 River Ravi Front Urban Development

The vision of the project mainly revolves around river improvement, development of high-quality river front urban development for millions of people with sustainable, livable and well managed engines of growth. It aimed at adapting the sustainable city principle through integrated development and green infrastructure and developing a world class economic center to foster the growth of surrounding regions. It envisages the dying river Ravi into living fresh water body with a sustainable river front city on its banks. It tends to abate river water pollution and water scarcity of the city simultaneously which is ultimate to promote the ecological uplifting of Ravi River.

6.5.Development of Industrial Zones

RUDA intends to develop planned industrial zone on national and international principles of urban planning that could facilitate a conducive atmosphere for national and international investments by maintaining the balance between environmental sustainability and economic growth of the region. Within the vicinity of the proposed zone, there is a significant industrial growth which is unplanned and haphazard. To control the haphazard growth of the industries, RUDA has suggested the site in RRUDP for industrial zone. RUDA has planned to upgrading the existing infrastructure and regularization of existing industry, through design guidelines and building regulations prepared by the Authority. The size of the industrial zone covers all dominant existing industrial areas which are being considered as Phase-I of RRUDP. The total area of the industrial zone is 6850.21 acres. The scale of the proposed industrial zone will accommodate multiple lands of industrial categories and facilitate to regularize the haphazard industrial development into a planned industrial zone/estate.

Fig-6.5.1 Master Plan of Industrial Zone

The industrial zone will be comprised of multiple urban structure facilities which are described in Table-6.5.1 as below:

Table-6.5.1 Detail of Public Facilities in Industrial Zone

Sr. No	Type of Public Facilities	Sr. No	Type of Public Facilities
1	Infrastructure Development	11	Vocational Training Institute
2	Source of Uninterrupted Power Supply	12	Labor accommodation facilities
3	Promote Renewable Energy Resources	13	Amenity Plots
4	Waste Water Treatment Plants and Drainage System	14	Office Plots
5	Access Roads and Industrial Roads	15	Freight Terminal/Truck Stand
6	Hospital	16	Fuelling Station/Workshops
7	Rescue and Emergency Service	17	Warehouse Plots
8	Whole Sale Market Plots	18	Industrial Expo and Trade Centre
9	Central Mosque	19	Multi-Purpose Sports Complex
10	Admin Block	20	Industrial Gate

6.6. Waste to Energy (WtE) Projects

Understanding of the physical and chemical composition of MSW is of great importance regarding future planning and management of MSW. The establishment of the proposed "Waste to Energy" program under RRUDP will be beneficial to Lahore based on the result of proximate / ultimate analysis and the heating values of MSW. Indeed, the incineration of 6000 Tons MSW /day has an energy recovery potential of 40MW as well as a high return with environmental benefits, including a reduction in GHG emissions. However, high moisture content, inadequate collecting systems, low collection efficiency are still challenges to maintain feed for the energy recovery system.

6.7.Installation of Wastewater Treatment Plants (WWTPs)

Currently, all the Wastewater generated in Lahore City (domestic and industrial) is being discharged untreated into River Ravi through different discharge points (via Disposal stations) without any treatment as no Wastewater Treatment Plant (WWTP) has been constructed in

Lahore City. Under the RRUDP, 11 no. of Wastewater Treatment Plants have been planned to treat wastewater from existing Lahore, as these sites are located in RUDA's Jurisdiction.

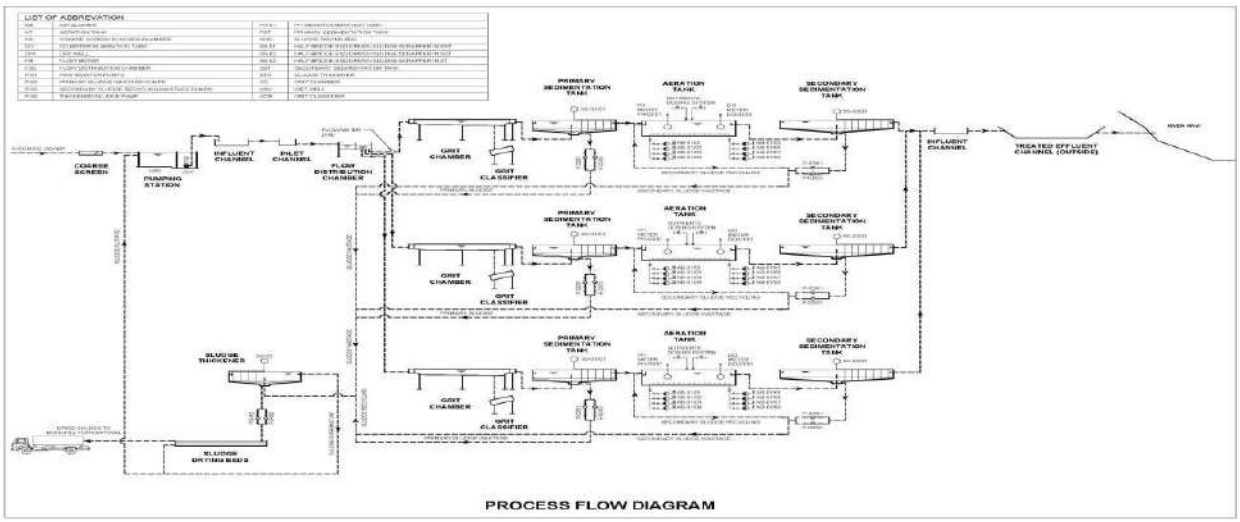


Fig-6.7.1 Process Flow Diagram WWTP

The proposed Wastewater Treatment Plant (WWTP) will not only protect the river against the pollution caused by municipal wastewater generated in Lahore, but also revive the water body through flow and retention.

Fig-6.7.2 Polluted water drain in RUDA Jurisdiction detrimental to humans and animals

This would allow the government to start various housing, commercial and recreational activities along the 46km-long stretch along both banks of Ravi River as being planned by Ravi Urban Development Authority (RUDA).

6.8. Development of Reserved Forest in Jurisdiction of RUDA

The forests under jurisdiction of RUDA will be protected and restored by restoring gene pool. There will be special focus on the plantation of indigenous species which are well versed with the existing climatic conditions which will survive the humidity of the environment and will participate reducing the temperature of the surroundings.

Fig-6.8.1 Afforestation Activities at RUDA Rakh Jhok Forest

Forests are the Carbon reserves and their protection protects the atmosphere and the regulation of temperature. Deforestation activities will be stopped and extensive plantation will be done according to the plantation plans. Indigenous species will be planted to protect the local ecological habitat, adding green areas to the vicinity of Lahore, in the jurisdiction of RUDA. The fallow land will be prepared for the plantation in the favorable seasons. The species which are water spenders would be avoided in any forest of RUDA jurisdiction and water will be conserved.

7. HSE Guidelines for Construction Works at Site

During the execution of works at Construction sites of RRUDP, it is mandatory to ensure that the execution of construction works in a manner that is safe for workers, property/Equipment, Community and environment. To fulfill this responsibility, all measures will be taken to comply with these HSE Guidelines, other project-specific safety and environmental procedures that may apply (e.g., Construction Laboratory Safety, building safety, Radiation Safety, Industrial Safety, Construction Safety, Road safety, etc.,) as well as all regulatory requirements. Work performed in a manner that endangers any person, property or environment will be prohibited and safe working procedures will be adopted.

7.1. Guidelines for HSE Board, Signage and Barricading

The main purpose of these guidelines is to provide complete mechanism for management of HSE signage. These guidelines describe the necessity for design, selection, installation, placement, maintenance and removal of safety signage from the site to create awareness of workplace-based hazards so as to adequately minimize the risk of injuries and harm associated to them. Signs are different in nature with respect to the hazard at workplace. Types of signs are discussed in Table-7.1.1;

Table-7.1.1 Hazards Based Signology

Sr. No.	Types of Signs	Definition/Description	Intrinsic Features	Symbol
1	**Safety and Health Signs**	A sign providing information or instruction about safety or health at work by means of a signboard, a color, an illuminated sign or acoustic signal, a verbal communication or hand signal.		
2	**Prohibition Sign**	"Prohibition sign" means a safety sign prohibiting behavior likely to cause a risk to health or safety. These health & safety signs are required to be red. A prohibition sign shall show only what or who is forbidden. The activities with potential risk are prohibited at the workplace.	Round Shape. Black pictogram on white background, red edging and diagonal line (the red part to take up at least 35% of the area of the sign). Color description - Red Instruction & Information – Dangerous behavior Stop, Shut Down, Emergency cut -off	

			devices, evacuate	
3	**Warning sign**	A warning sign is a type of sign which indicates a potential hazard, obstacle or condition requiring special attention. Warning signs have the shape of an equilateral triangle with a white background and thick red border. Warning sign provides the potential of risk at the workplace.	Triangular shape. Black pictogram on a yellow background with black edging (the yellow part to take up at least 50% of the area of the sign). Color description – Yellow or Amber Instruction & Information – Specific behavior or Actions	
4	**Mandatory Sign**	A "mandatory sign" means a sign prescribing behavior. These signs are required to be blue. A mandatory sign shall show only what action is required. Mandatory signs generally use a white safety symbol on a blue background. Mandatory signs protect from the major or work associated injury.	Round shape. White pictogram on a blue background (the blue part to take up at least 50% of the area of the sign). Color description – Blue Instruction & Information - Be Careful, Wear PPE's etc.	
5	**Information Sign**	An informative sign is a very legibly printed and very noticeable placard that informs people of the purpose of an object, or gives them instruction on the use of something.		
6	**Emergency Escape and First Aid Sign**	Emergency escape or first-aid sign – a sign giving information on emergency exits, first aid, or rescue facilities (e.g., 'emergency exit/escape route'. It is a part of information sign. Emergency/Escape route helps in safe evacuation with the displayed signs.	Rectangular or square shape; White pictogram on a green background (the green part to take up at least 50% of the area of the sign). Color description - Green Instruction & Information - Door, Exit, Escape Route, Equipment Facilities like First Aid	 

7	**Fire Extinguisher Signs**	To notify people of the location of fire extinguishers. The location of fire extinguishers is selected on the basis of fire risk.	Rectangular or square shape; White pictogram on a red background (the red part to take up at least 50% of the area of the sign). Color description - Red Instruction & Information – Identification & Location	
8	**Signage's color**	A color to which a specific meaning is assigned (e.g., yellow means 'be careful' or 'take precautions'). It is associated with medium level risk.		
9	**Symbol or pictogram**	Used on a signboard or illuminated sign (e.g., Ionizing radiation warning sign.		
10	**Illuminated sign**	A sign made of transparent or translucent materials which is illuminated from the inside or the rear to give the appearance of a luminous surface (e.g., emergency exit signs). It is also activated in the dark.		
11	**Acoustic signal**	A sound signal which is transmitted without the use of a human or artificial voice (e.g., a fire alarm). The signal loudness should be high.		
12	**Verbal communication**	A predetermined spoken message communicated by a human or artificial voice. The voice must be clear to understand.		
13	**Hand signal**	A movement or position of the arms or hands giving a recognized signal and guiding people who are carrying out maneuvers which are a hazard or danger to people.		

7.1.1. Globally Harmonized SYSTEM (GHS) Hazard Pictogram (Integrated with COSHH)

Table-7.2.1 Hazard and its Symbolic Representation

Hazards	Symbolic Representation	Hazards	Symbolic Representation
Compressed Gas		Harmful Skin Irritation	
Environmental Hazards		Corrosive	
Flammables Self Reacting		Health Hazards / Carcinogenic Respiratory	
Flammable Solid		Acute Toxicology	
Flammable Liquids and Gases		Explosive Self Reactive	

7.1.2. Methodology

Safety signage shall be provided to draw attention to objects and situations affecting Health & Safety. The term ‘safety signs’ includes both written and pictorial signs as well as all signals and warnings like alarms and hand signals. The safety signs will be properly displayed at appropriate

and prominent/visible places. The safety signs will also be prepared in local language for local people understanding.

7.1.3. General Guidelines for Signology

- The signage requirements shall be selected after evaluating the workplace hazards.
- Where signs or signals depend on power, for example a fire alarm or an illuminated warning sign, they must be provided with an alternate emergency supply in the event of a power failure. Power failure should be backed up with power source.
- Signs should be large and prominent enough to view without straining the eyes when communicating safety messages to employees and / or visitors.
- Acoustic signals (for example a fire alarm) must be at a sound level which is considerably greater than the surrounding ambient noise, so that it is clearly audible without being excessive beyond permissible limits. It will be generated in time.
- Signs must not be placed on movable objects where a change in position would relocate the sign out of sight. Lack of information may cause accident.
- Signs must be clearly visible at the point of selected location.
- External or internal signs should be illuminated where it is required or where there is poor visibility as determined in risk assessment. Seasonal fog/smog will be considered.
- Signage is an administrative control and must not be chosen as a primary control measure. Signage will reduce risk potential. They must be used as per hazard category as below;

7.1.4. Physical & Chemical Hazards

- Working in confined spaces (to prevent unauthorized entry or to warn about hazards inside). Local people and children should not come in close contact with the site.
- Working at height (to prevent unauthorized access or to warn about hazards).
- To prevent unauthorized access to scaffolds while the scaffold is incomplete or unattended. The information must be communicated about work harm.
- To keep people away from areas where scaffold erection, work at height like roof work going on. The work in trenches must be warned.
- In areas where lifting and critical activities are going on. Heavy machinery working areas.
- At Hazardous areas like chemical storage or gas cylinder storage.
- In high dust areas where visibility may be suffered.

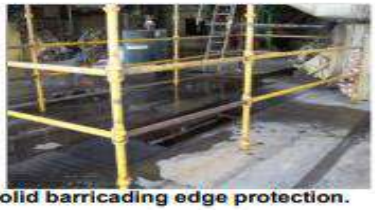
7.1.5. Use of Barricading / Warning Tape

Barricades shall be used as a physical barrier to prevent personnel from coming in contact with a potential Hazard. Barricades can be soft or hard depending upon risk, hazards and duration of its persistence and used accordingly. These must be clearly visible that can restrain personnel when

used in situations where crossing the barricade poses an immediate and serious hazard of any category to personnel.

Table 7.1.6.1 Barricading Color Coding and Barrier

Color	Purpose	Pictogram
Red/White	Restricted Access This type of warning tape is used for construction activities, Overhead work, Live electrical components, Scaffold under construction, Around swing radius of equipment with a rotating superstructure etc.	
Magenta / Yellow	This type of Warning tape is used where Radiation Hazards exist.	
Blue / White	Used for Defective Machinery Access Permitted under instruction of PTW/ Workplace Coordinator. This type of warning tape is used for Commissioning activity.	
Black / Yellow	Access Permitted Caution Required. This type of warning tape is used for Excavation less than 1.2 meters (4 feet) in depth, Identification of trip hazards and low hanging objects, Material storage on site	
Barrier Mesh and Bunting Flag	Barrier mesh and bunting flags are high visibility soft barricading options where a solid barricade is not required. May be used in conjunction with appropriate barricading tape and signage to delineate work areas that require authorized access, or used to highlight the boundary of a work area.	

Solid / Hard Barrier e.g Jersey, Expandable Barriers, Scaffolding equipment	Hard barrier control options include but are not limited to: **Jersey type barriers** A modular device used to segregate areas where plant and equipment is being operated and as a traffic safety control. **Expandable/concertina barriers** These are a free standing, portable hard barrier option. **Scaffolding equipment** Where the barrier is required to perform the same function as a permanent handrail/guardrail	 Jersey type  Expandable/concertina  Solid barricading edge protection.

7.1.6. Use of Sign Boards

- The signboards used in workplace are to be sufficiently large and clear so that it can be easily understood. The sign boards language should be easy and clear
- All safety signs require adequate illumination and size and should be appropriate for intended viewing. The sign should be clear at some certain distance
- Dimensions of all signboards shall be selected as per requirements where installed
- The signboards shall be work relevant and placed before start of work
- Local language will also be used for the Sign Boards for the labor and the local people to understand easily

Fig 7.1.7 Sign Boards in Local Language

7.2.HSE Guidelines for Transportation, Safety Management

These guidelines explain the mechanism for planning, executing and monitoring of transportation / logistic operation within the Organization to ensure the safety of personnel & asset/machinery.

7.2.1. Methodology

This methodology explains the details regarding planning, monitoring and management of safe operations of transportation/ logistics as follows:

a) Transportation safety management
b) Logistics safety management

7.2.1. Transport Safety Management

Transportation is one of the most critical parts of our organizational operation. Transportation safety management shall be done to prevent and control all the transportation related hazards and risks at respective Office, Project site, external roads (highways). Competent drivers and Safety maintained Vehicle; both are required to ensure safe transportation. Administration department of the respective Office, Project site, shall implement transportation safety management system, through effective planning and arrangements in pursuance of zero transportation incidents. Unauthorized people would not be allowed to be present near heavy machinery working area to avoid any accident. Staff will be kept well aware of the heavy machinery activity.

In case of projects sites, In-charge administration along with representative of respective Project shall be completely responsible for transportation safety management. Transportation safety management system shall be executed as follows:

Fig.7.2.2 Heavy Machinery Working Site with Minimum Emissions

- Effective site lay-out planning for traffic routes with speed barrier within office premises, Sites, external roads.
- Safe vehicle (Certified from Vehicle Inspection & Certification System VICS)
- Competent driver (License and safe driving experience)

7.2.2. Types of Vehicles

There are two main categories of vehicles used for company transportation operations as mentioned below:

7.2.2.1. **Authority owned vehicles**

Any vehicle (car, van, bus, coach, truck, trailer, pickup truck, emergency vehicle (e.g., fire tender, ambulance)) that is directly owned, leased or rented by the Authority and being operated in connection with Authority business, including personal vehicles whilst used for Authority business. All vehicles owned by Authority shall be certified fit for use as per Authority criteria before assigning for any transportation activity.

7.2.2.2. **Contracted Vehicles**

Any vehicle that is leased, directly owned, or rented by a contractor, that provides services for the Authority operations under formal (contractual) agreement.

7.2.3. Selection Criteria of Drivers

Drivers deployed for assigned jobs shall meet the following criteria:

- All drivers shall have valid driving license with experience of at least 5-7 years
- Drivers shall have specific driving qualifications certificate from the approved training providers. Maximum age limit for drivers is 55 years
- Must be medically examined prior to hiring/selection & annually and shall possess current medical fitness certificates

7.2.4. Driver's HSE Induction

HSE induction of the driver should be done before assigning any driving job in the organization. The induction includes, introduction of transportation, risk assessment, knowledge about vehicle, first aid, defensive driving techniques, emergency response preparedness etc.

7.2.5. General HSE guidelines for Transportation Activities

As per general driving guidelines, in all kind of road surfaces the drivers shall ensure that:

- All vehicles used shall be fitted with seat belts, administration encourage and ensure the installation and use of seat belts in all personnel vehicles as mandatory article
- All belts shall be functioning, inspected regularly and worn correctly by drivers and passengers when on the road
- Night driving shall generally be prohibited and avoided as far as possible and if required then it must be authorized by the concerned department. The lights should be functional
- Follow defensive driving requirements
- Avoid sudden brakes and maintain safe distance
- Speed limits and road safety signs should be strictly followed with necessary understanding
- Careful drive during foggy weather, rainy conditions, sand storms and any conditions
- where low visibility prevails, avoid driving or drive more carefully following speed limits
- Do not use mobile phones while driving, ensure seat belt compliance and do not smoke while driving or any other activity which can divert attention
- Follow traffic rules strictly; any violations will be directly accounted to the respective driver and fines shall be recovered from individual accounts as in reference to disciplinary actions

7.2.6. Rules for Parking

- Park vehicles in designated/marked spaces only
- Do not park in spaces that are reserved for special people vehicles or emergency response
- Do not block other vehicles around
- While parking, follow the below seven rules of safe parking:

a) Always Park so, the first move in the vehicle is forward – you may have to reverse park at the end of your trip, if so, make sure that the rear is clear
b) Look around, sound the horn before you start to reverse
c) Reverse immediately never trust the scene you checked to stay the same
d) Reverse slowly
e) As you start reverse, check both side-mirrors
f) Don't back further than necessary
g) Use a ground guide

7.2.7. Emergency Procedures and Preparedness

- Fire extinguishers shall be made available in the transportation vehicle as per provision
- First aid box shall be made available on the large commuting Vehicles
- Three sets of reflective triangles are provided to each large vehicle shall be used in case of an emergency break down
- Shall have effective means of communication between drivers and office of respective Admin in case of any emergency and unwanted happening

7.2.8. Traffic Management Plan

The plan is mandatory during the construction period of the Ravi Riverfront Urban Development Project (RRUDP), considerable vehicular movement carrying large amounts of material and machinery is expected. It can interrupt the local traffic and is therefore important to manage the traffic to avoid the nuisance to local residents in terms of noise, dust, congestion and inconvenience.

The TMP will advise and inform site Contractors and external suppliers of equipment and materials of access and entry points along with other key information such tipping areas and wash-out areas. It is intended to compliment and work alongside relevant EMP. The TMP will be classed as “live” and therefore be subjected to updates as required.

The Contractor, at the time of the execution of the project, will prepare a comprehensive TMP in coordination with local traffic police department, RUDA, emergency services and local administrative department. RUDA and CSC will review and approve the Contractor’s TMP. The

Contractor’s TMP shall include following mitigation measures during its preparation:

- Undertake a road conditions assessment prior to and following the peak construction period, to assess any damage to road infrastructure that can be attributed to Project development. The road will not be damaged during the transportation activities
- Material will be properly covered while being transported and no scattered material

- Repair damage as appropriate or enter into a voluntary agreement with the relevant roads authority to reimburse the cost of any repairs required to the public road network as a result of the Project
- Spoil dumpsites located close to project site to minimize journey distance and limit movements to site access roads
- Construction of worker accommodation on site to reduce light vehicle movements relating to travel to/ from the site
- Provision of bus/minibus services for personnel living in nearby settlements.
- Movements of construction workers will be planned to avoid the busiest roads and times of day when traffic is at its greatest
- Schedule deliveries and road movements to avoid peak periods
- Driver training for HGV drivers and refresher course every six months for project drivers.
- Speed restrictions for project traffic travelling through communities (to be agreed with National Highway Authority and Client). Run a safety campaign to improve the people's knowledge of the traffic hazard on their roads, public information and other activities to address the issues

7.3.HSE Guidelines for Lifting and Rigging Operation

This document shall provide the guidelines for managing & controlling safe lifting and rigging operations along with safe maintainability and handling of lifting and rigging equipment.

7.3.1. Lifting and Rigging Procedures

Lifting & rigging is considered as one of the most crucial and hazardous job, required for the movement/shifting of material & equipment. Following are the major components of Lifting & Rigging operation planning:

- Pre lifting planning (Paper work, procedure and PTW)
- Risk Assessment (Hazard identification)
- The Load/Equipment Weight, height &dimension
- Ground/workplace conditions (area specifications)
- Determination of Centre of Gravity of the Load (load handling)
- The Path of material shifting (no object interruption)
- Operator and Rigging personnel

Equipment operator and rigger shall be third party certified. Lifting equipment shall be operated by only competent, certified & trained personnel. A safe lifting/rigging operation requires the rigger & operator to know in depth the following:

- The weight of the load and rigging gears (no overloading)
- The capacity of the hoisting/Lifting device (Hoist Information)